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How 1st-Tier Suppliers Respond to Green Public Procurement Policies: An Empirical Analysis

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How 1st-Tier Suppliers Respond to Green Public Procurement Policies: An Empirical Analysis

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ABSTRACT

This article analyses how 1st-tier suppliers to public organisations respond operationally to Green Public Procurement (GPP) policies. Through a multiple case study of 12 Italian firms operating in different sectors, we develop a classification of suppliers' responses, identifying two interrelated macro-types: internal operations realignment and supply network reconfiguration. These are further delineated into more specific responses, with the most frequent being, respectively, stricter incoming quality control procedures and the expansion of the 2nd-tier supply base (often towards small, local suppliers). The cross-case comparison reveals sector-specific contingencies, particularly related to the type of GPP criteria that companies aim to fulfil (i.e., mandatory versus award criteria). We interpret our findings through the lens of *Institutional Theory*, resulting in a novel conceptual framework that illustrates how GPP policy design—specifically, the stringency of mandatory criteria—influences the institutional pressures to which suppliers react. Accordingly, we propose practical recommendations and future research avenues.

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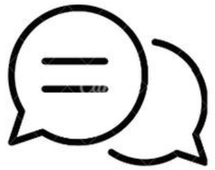

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Green Public Procurement (GPP)

> *GPP is a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle compared to goods, services and works with the same primary function that would otherwise be procured.*

European Commission (COM (2008) 400, p.4)

Public procurement accounts for

16%

of the EU's GDP

(European Commission (EC), 2023)

- Many countries have implemented GPP policies that require specific **Criteria** to be included in tenders when selecting suppliers for relevant product categories *(Behravesh et al., 2022; Sandez et al., 2026)*

→ *Ecodesign for Sustainable Products Regulation* will soon make GPP mandatory across the EU *(EC, 2024)*

- Procurement criteria are broadly of two types:

Mandatory or Minimum Criteria	Must be met by candidate suppliers to be considered for the contract
Award or Rated Criteria	Are voluntary for candidates but grant more points in tender evaluation

(Rosell, 2021; Testa et al., 2016)

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Levels of Analysis & Research Gaps

Level of Analysis	Exemplary Studies	Dominant Focus	Primary Perspective	Key Limitations/Gaps
Policy	*Ho et al., 2010; Nissinen et al., 2009; Lundberg et al., 2015*	Legal frameworks, criteria design and adoption, cost-efficiency	*Government, policymakers*	Lacks focus on the micro-level operational consequences for individual firms
Organizational (Buyer)	*Testa et al., 2012; Rosell, 2021; Santos et al., 2025*	Implementation drivers and barriers, purchasing behavior	*Public procurement professionals*	Overlooks how buyer behaviors impact the supply chain
Organizational (Supplier)	*Krieger and Zipperer, 2022; Deschamps, 2025; Ma et al., 2021*	Innovation potential, SME participation, sustainability performance	*1st-tier suppliers*	Focuses on outcomes (e.g., patents) rather than the process of operational adjustment

RQ: *How do the 1st-tier suppliers to public organizations respond operationally to GPP policies??*

Multiple-case study *(Voss et al., 2002; Yin, 2014)*

Case selection (12 cases)

1. **With active GPP-regulated contracts with PAs**
2. **Operating in Italy** → *same policy background*
3. **Differing in terms of sector, size, % revenue from PAs**

Data collection

- **Semi-structured interviews** *with key informants and ad-hoc interview protocol*
- **Triangulation** *with additional documentation (sustainability reports, tender documents)*

Data analysis

- **Coding and validation**
- **Within-case analysis** → *case specificities*
- **Cross-case analysis** → *common patterns*

Unit of analysis:
1st-tier suppliers

Research design:
Theory-building, inductive

Interpretive Lens

Comparison and evaluation against relevant theories

Case description

ID	Main Product or Service Category	Annual Turnover	Share from Public Sector	GPP Criteria Publication [a]	Pre-GPP Certifications	Key informants
S1	Interior furnishings (Product)	23 M€ (2023)	35-40%	2017	Yes	Head of management systems
S2	Cleaning & sanitising (Service)	705 M€ (2022)	60%	2012	Yes	Chief innovation officer & head of sustainability
S3	Interior furnishings (Product)	5.5 M€ (2022)	90%	2017	No	Sales engineer
S4	Vending machines (Service)	143.5 M€ (2022)	20-30%	2023	Yes	Head of the service area and food safety
S5	Green maintenance (Service)	12 M€ (2023)	90%	2013	Yes	Head of purchasing
S6	Cleaning & sanitising (Service)	97 M€ (2023)	50%	2012	Yes	QA manager, Technical employee, Sales engineer

[a] year of relevant GPP criteria publication and revision by MASE (n.d.)

Case description

ID	Main Product or Service Category	Annual Turnover [€]	Share from Public Sector	GPP Criteria Publication [a]	Pre-GPP Certifications	Key informants
S7	Vending machines (Service)	21.5 M€ (2023)	30%	2023	Yes	Chairman, Commercial director, Tender manager
S8	Urban furnishings (Product)	5.5 M€ (2023)	80-90%	2015	Yes	Commercial director
S9	Textile & clothing (Product)	2 M€ (2023)	90%	2017	No	Company owner
S10	Urban furnishing (Product)	4 M€ (2023)	>90%	2015	Yes	CEO, Workshop manager
S11	Textile & clothing (Product)	24 M€ (2023)	85-90%	2017	No	Commercial director
S12	Green maintenance (Service)	17 M€ (2023)	90%	2013	Yes	Technical managers (3)

[a] year of relevant GPP criteria publication and revision by MASE (n.d.)

Interview protocol

Company Profiling

- *Company details* (turnover, # of employees)
- *Share of turnover from the public sector* and *main public clients*
- *Sustainability certifications* before and after GPP criteria publication
- *Pre-existing structure of the supply network*

Operational Responses to GPP

- *Most challenging GPP criteria* to implement
- *Operational adjustments* in response to GPP criteria
- *Impact on costs*
- *Perceptions of GPP implementation* by public clients

Within-case analysis

ID	1st-tier Suppliers' Operations	1st-tier Suppliers' Supply Network	2nd/Upper-tier Suppliers
S1	QUALITY CONTROL;	NEW 2ND-TIER; SUPPLIER DEVELOPMENT	CERTIFICATION; PRODUCTION; NEW UPPER-TIER
S2	QUALITY CONTROL; SERVICE DELIVERY; STAFF TRAINING;	NEW 2ND-TIER	
S3	QUALITY CONTROL; PRODUCT DESIGN; CERTIFICATION	NEW 2ND-TIER; NEW SOURCING FROM INCUMBENT	PRODUCTION
S4	QUALITY CONTROL; SERVICE DESIGN	NEW 2ND-TIER; SUPPLIER DEVELOPMENT	CERTIFICATION; PRODUCTION
S5	QUALITY CONTROL; SERVICE DELIVERY; STAFF TRAINING	NEW 2ND-TIER; NEW SOURCING FROM INCUMBENT	CERTIFICATION
S6	QUALITY CONTROL; SERVICE DELIVERY; CERTIFICATION; STAFF TRAINING		PRODUCT DESIGN
S7	SERVICE DESIGN; SERVICE DELIVERY	NEW 2ND-TIER; SUPPLIER DEVELOPMENT; NEW SOURCING FROM INCUMBENT	CERTIFICATION; PRODUCTION
S8	PRODUCT DESIGN		NEW UPPER-TIER; STAFF TRAINING
S9	QUALITY CONTROL	SUPPLIER DEVELOPMENT; REMOVAL OF 2ND-TIER	QUALITY CONTROL; CERTIFICATION
S10	PRODUCT DESIGN; CERTIFICATION; STAFF TRAINING	NEW 2ND-TIER; NEW SUPPLY CHAIN	CERTIFICATION
S11	QUALITY CONTROL; CERTIFICATION	NEW 2ND-TIER; SUPPLIER DEVELOPMENT; NEW SUPPLY CHAIN	CERTIFICATION
S12	QUALITY CONTROL; SERVICE DELIVERY	NEW SOURCING FROM INCUMBENT; NEW SUPPLY CHAIN	SERVICE DELIVERY

Within-case analysis

Key revisions to internal processes	***Key revisions to supply networks***
1) QUALITY CONTROL: introducing measures to check compliance of supplies from 2nd/3rd-tier suppliers	1) NEW 2ND-TIER: scouting and integrating new suppliers – often SMEs – to meet stricter requirements
2) PRODUCT or SERVICE DESIGN: introducing ad-hoc sustainable features into their products/services	2) SUPPLIER DEVELOPMENT: establishing programs/ guidelines to instruct 2nd-tier suppliers
3) PRODUCTION or SERVICE DELIVERY: introducing env. improvements to how production/services are run	3) NEW SOURCING FROM INCUMBENT: selection of greener items from the incumbent 2nd-tier suppliers
4) CERTIFICATION: obtainment of required/ recommended certifications by the 1st-tier suppliers	4) NEW SUPPLY CHAIN: establishing whole new chains, such as closed-loop chains for product reuse
5) STAFF TRAINING: introducing sustainability courses for personnel	5) REMOVAL OF 2ND-TIER: removing noncompliant suppliers

Within-case analysis

Key revisions to internal processes

1) QUALITY CONTROL: introducing measures to check compliance of supplies from 2nd/3rd-tier suppliers
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Within-case analysis

Key revisions to supply networks

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5) REMOVAL OF 2ND-TIER: removing noncompliant suppliers

Cross-case analysis

		Scenario 2						Scenario 1					
		Cleaning & sanitising		Green maintenance		Urban furnishings		Interior furnishings		Textile & clothing		Vending machines	
		S6	*S2*	*S5*	*S12*	*S10*	*S8*	*S3*	*S1*	*S9*	*S11*	*S7*	*S4*
1st-tier Operations	*Quality Control*	●●	●●	●●	●●			●●	●●	●●	●●		●●
	Product or Service Design					●●	●●	●●				●	●
	Production or Service Delivery	●	●	●●□□	●●□□							●●□□	
	Certification	□□				●		□□			●●□□		
	Staff Training	●●	●	●●□□		●							
1st-tier Supply Network	*New 2nd-tier*		□□	□□		●●		●●	●●		●●	□□	□□
	Supplier Development								●●	●●	●●	□□	□□
	New Sourcing from Incumbent			●●□□	●●□□			●●				●●	
	New Supply Chain				□□	□□					□□		
	Removal of 2nd-tier									●●			
2nd & Upper-tier	*Certification*			□□		□			●●	●●	●●□□	□□	□□
	Production or Service Delivery				□□			●	●●			□□	□□
	Other Operational	●					●			●●			
	New Upper-tier						●●□□		●●				

Legend

●● Significant adjustments, clearly attributable to *GPP mandatory criteria*

● Moderate adjustments, already in progress and reinforced by *GPP mandatory criteria*

□□ Significant adjustments, clearly attributable to *GPP award criteria*

□ Moderate adjustments, already in progress and reinforced by *GPP award criteria*

Interpretive lens

Institutional Theory

extensively used in SSCM to explain the adoption of sustainability practices

It posits that organizational behaviors are shaped by pressures to conform to external norms, rules, beliefs within the social environment *(DiMaggio & Powell, 1983)* → *3 pressure forms*:

1. ***coercive pressures*** compel compliance through formal mandates like government regulations or demands of powerful customers

2. ***mimetic pressures*** drive organizations to imitate successful peers to reduce risk

3. ***normative pressures*** arise from the diffusion of shared values, influenced by key stakeholders' expectations or industry standards

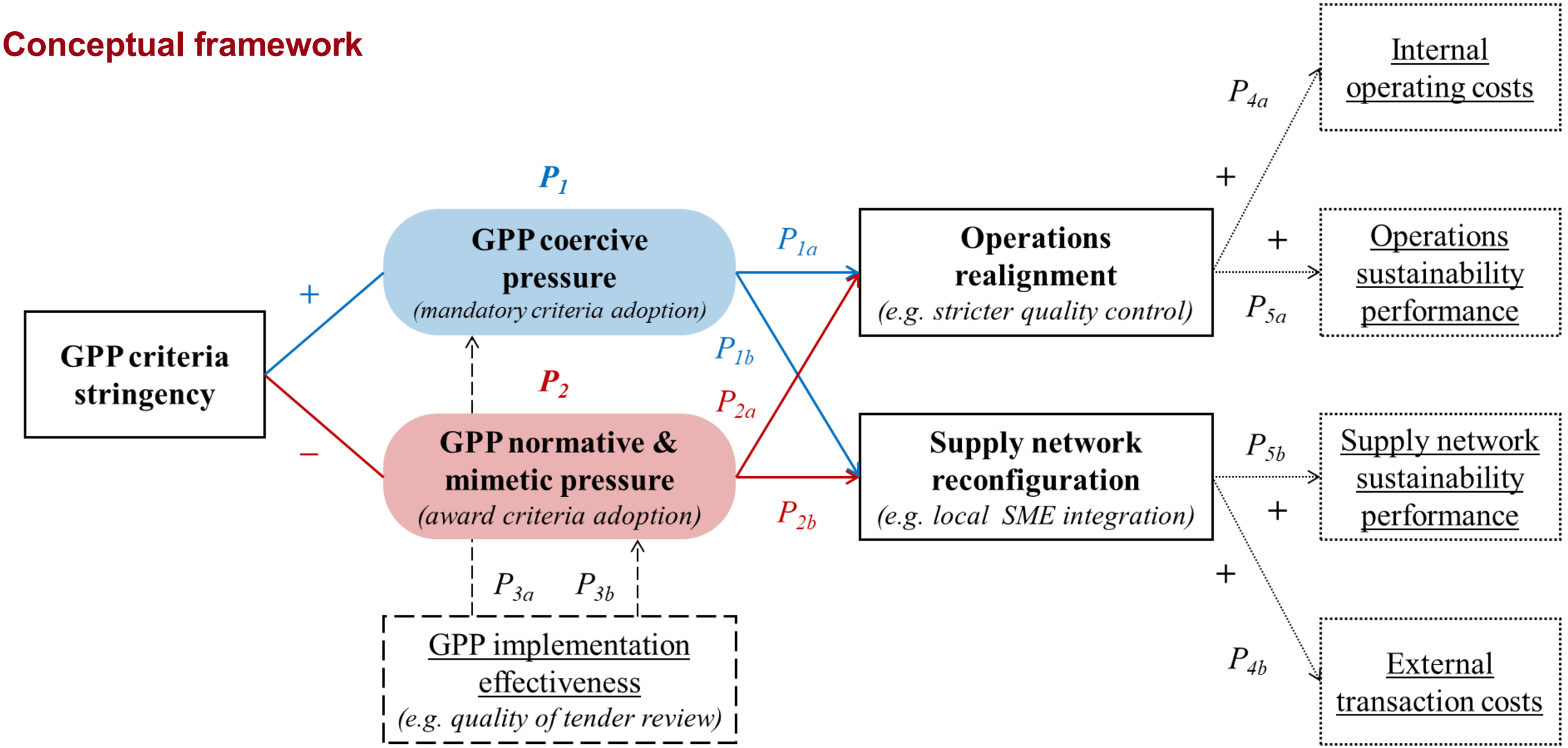
Mandatory criteria

Scenario 1

Award criteria

Scenario 2

Conceptual framework



Contributions

- ***Theory*** → first study to take a supply chain perspective on GPP and provide empirical evidence of the operational responses by 1st-tier suppliers to public organizations.
- ***Practice*** → novel insights for policymakers to fine-tune GPP policies and for suppliers to respond effectively to GPP.

Limitations

- *Focus on specific sectors* may limit the findings' generalizability.
- *Focus on the Italian context* may restrict transferability to countries with different GPP policies.

Future directions

- *Cross-country samples* to explore contextual variations in GPP responses.
- Extend the investigation to the *upper supply tiers*.

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Thank you

Within-case analysis

ID	Additional information
S1	*COSTS*: increased due to supplier development *CRITICAL SOURCING CATEGORIES*: packaging and leather *PERCEPTIONS OF GPP IMPLEMENTATION*: lack of tender bases adequate to GPP requirements
S2	*COSTS*: increased due to stricter quality control and higher purchasing costs of sustainable cleaning products *CRITICAL SOURCING CATEGORIES*: commercial vehicles *PERCEPTIONS OF GPP IMPLEMENTATION*: limited inclusion of award criteria in tenders
S3	*COSTS*: highly increased due to the required verification of supplies and certifications *CRITICAL SOURCING CATEGORIES*: packaging *PERCEPTIONS OF GPP IMPLEMENTATION*: lack of adequate review of bid documentation; lack of GPP training for public sector employees
S4	*COSTS*: slightly increased due to procurement and scouting of local fresh food product suppliers and related supplier development *CRITICAL SOURCING CATEGORIES*: local fresh food products
S5	*COSTS*: increased due to scouting of new equipment and plant suppliers, stricter quality control, and staff training; increased purchasing costs for eco-fuels and biodegradable lubrication oils; increased purchasing costs of new greenery equipment, but decreased operating costs due to its higher efficiency, resulting in an anticipated net long-term benefit *CRITICAL SOURCING CATEGORIES*: greenery equipment and commercial vehicles
S6	*COSTS*: increased due to supplier development *CRITICAL SOURCING CATEGORIES*: packaging and leather *PERCEPTIONS OF GPP IMPLEMENTATION*: lack of tender bases adequate to GPP requirements

ID	Additional information
S7	*COSTS*: increased due to the opportunity costs/potential sales losses associated with new service design (e.g., water bottles displaced by water dispensers, most-selling items limited by space given to organic/vegan options) *CRITICAL SOURCING CATEGORIES*: local fresh food products and commercial vehicles *PERCEPTIONS OF GPP IMPLEMENTATION*: lack of tender bases adequate to GPP requirements, especially to compensate for potential sales losses; poor knowledge of the industry, but involvement of the industry association in GPP criteria-setting
S8	*COSTS*: slightly increased due to the required processing and transmission of certifications *CRITICAL SOURCING CATEGORIES*: semi-finished plastic products and cement components *PERCEPTIONS OF GPP IMPLEMENTATION*: lack of adequate review of bid documentation
S9	*COSTS*: increased due to stricter quality control performed by fabric suppliers and charged to the firm *CRITICAL SOURCING CATEGORIES*: leather products and packaging *PERCEPTIONS OF GPP IMPLEMENTATION*: lack of GPP training for public sector employees, limited inclusion of award criteria in tenders
S10	*COSTS*: increased due to obtained certifications and higher purchasing costs of certified materials (wood, plastic, and metal components) – offset by higher tender bases *CRITICAL SOURCING CATEGORIES*: plastic items, packaging, and wood *PERCEPTIONS OF GPP IMPLEMENTATION*: lack of GPP training for public sector employees; lack of adequate review of bid documentation
S11	*COSTS*: increased due to stricter quality control, required certifications, and higher purchasing costs of certified materials, with the former undermining profitability in case of tenders involving small slots *CRITICAL SOURCING CATEGORIES*: leather accessories *PERCEPTIONS OF GPP IMPLEMENTATION*: limited inclusion of award criteria in tenders
S12	*COSTS*: increased due to new operating practices related to green maintenance and waste management; increased purchasing costs of new greenery equipment *CRITICAL SOURCING CATEGORIES*: seedlings and greenery equipment *PERCEPTIONS OF GPP IMPLEMENTATION*: lack of technical knowledge, especially in smaller public bodies

Research propositions

P1: *Under conditions of high perceived stringency of GPP criteria, 1st-tier suppliers are more likely to pursue operations realignment ($P1_a$) and supply network reconfiguration ($P1_b$) to ensure compliance with mandatory criteria.*

P2: *Under conditions of low perceived stringency of GPP criteria, 1st-tier suppliers are more likely to pursue operations realignment ($P2_a$) and supply network reconfiguration ($P2_b$) to achieve competitive advantage through award criteria.*

P3: *The relationship between GPP criteria stringency and operational responses is moderated by the perceived effectiveness of GPP implementation by public buyers, influencing coercive ($P3_a$) and normative-mimetic ($P3_b$) pressures.*

P4: *Operational responses by 1st-tier suppliers lead to increases in their cost structures, with operations realignment affecting internal operating costs ($P4_a$) and supply network reconfiguration affecting external transaction costs ($P4_b$).*

P5: *Operational responses by 1st-tier suppliers enhance sustainability performance, with effects observed at the internal operations ($P5_a$) and broader supply network ($P5_b$) levels.*